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Comments of the Office of Ratepayer Advocates on the Final Release of the Phase I report of the California Renewable Portfolio Standard Renewable Generation Integration Cost Analysis[1], dated December 10, 2003, sponsored by the California Energy Commission in support of the California Public Utility Commission's Renewable Portfolio Standard (RPS) implementation.

The Office of Ratepayer Advocates (ORA) strongly supported the earlier October 9, 2003 version of the Phase I report of the California Renewable Portfolio Standard Renewable Generation Integration Cost Analysis. We stated this in our comments dated October 24, 2003, which were incorporated into Appendix C of the final report. We continue our strong support of the study, and agree that the Phase I results "provide some values which can be applied immediately to RPS bid selection while the methodologies are refined and finalized in the subsequent phases of the study."

At the Renewables Committee Workshop held on February 20, 2004 at the California Energy Commission ORA reiterated some of the issues expressed in our October 24, 2003, comments. These include: (1) support of the Effective Load Carrying Capability (ELCC) method for evaluating the contribution of intermittent renewable energy sources, (2) general support for the finding in the report that wind ELCC values were 22 to 26 percent of rated power for the cases

[1] Hereinafter referred to as "the report".

studied, which are consistent with ORA testimony in CPUC cases[2] and with other studies[3], and (3) agreement that the low ELCC for solar thermal plants must indicate some error in the data or analysis method, and should not be used for RPS bid evaluation.

We do have a serious concern based on a new study, or study-in-progress, by Southern California Edison, which we first became aware of at the Renewables Committee Workshop held on February 20, 2004 at the California Energy Commission. Southern California Edison announced at the workshop that it had hired Edward Kahn[4] of the Analysis Group[5] to perform an ELCC study of wind energy in its service territory. Although this study will be a methodological step forward for SCE, as it apparently will finally accept the probabilistic ELCC concept, the preliminary results, as given by Dr. Kahn, indicate a finding of only a13% rating as the ELCC for the wind power plants in the SCE area. The study will not be submitted to the CEC until February 27, 2004. Since this is the deadline day for comments, no other party in this process will have an opportunity to examine this study before they make comments.

Dr. Kahn's cursory presentation of his preliminary results at the workshop included a wind ELCC of 13% of rating, apparently based on the 2002 hourly output of the wind power sites in the SCE area. Hydroelectric dispatch conditions apparently play a part in the ELCC method used by the Kahn study, as he stated that they used hydroelectric dispatch data from the year 2000. He also noted that the ELCC for 2003 is higher, although he did not give a specific result. ORA had earlier[6] computed an ELCC for 2002 for the total output of the wind generation areas of SCE[7] of

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[2] ORA found, based on four years of data, that the Tehachapi and San Gorgonio wind farms had average annual ELCC/Rating values of 25 and 24 percent, respectively.

[3] "Wind Energy Resource Potential and the Hourly Fit of Wind Energy to Utility Loads in Northern California", Wind power '90, D.R. Smith for PG&E, p.51.

[4] Edward Kahn is author with Paul Joskow of "*A Quantitative Analysis of Pricing Behavior in California's Wholesale Electricity Market During Summer 2000: The Final Word*" and is co-author of the books *Electric Utility Planning and Regulation* and *International Comparisons of Electricity Regulation.*

[5] Analysis Group, Inc. provides economic, financial, and business strategy consulting to law firms, corporations, and government agencies. [They] assist law firms with all aspects of litigation, including pretrial discovery, development of economic and financial models, preparation of testimony, and critique of opposing experts. From their website: http://www.ag-inc.com/default.htm

[6] ORA analyzed hourly wind output and total system load data obtained from SCE through a data request. The confidentiality or lack thereof of this data is not yet resolved. We have not been able to obtain a release from SCE to make public the wind output during the peak annual load hours. However, we feel we can make public the fact that

227 MW. In other words, the wind plant output during high load hours in 2002 gave the same contribution to SCE system reliability (ELCC) as would have been supplied by a perfectly reliable dispatchable plant rated at 227 MW[8] running during all hours of high load. Comparing this to the maximum wind output seen during the top 100 load hours, 701 MW, indicates that the ELCC is 227/701 = 32% of the "rating,"[9] or over twice the figure given by Edward Kahn at the workshop.

We don't know the source of this major discrepancy between Dr. Kahn's ELCC number as given at the workshop, and the ORA's ELCC numbers, which are quite similar to those found in the Integration Cost Analysis report. We assume we are using the same numbers for hourly output and SCE load. It is probable that the major difference comes in the treatment of the hydroelectric dispatch, which has been added to the Kahn ELCC evaluation method. Until we know more about this, we can't comment intelligently on this subject. We are concerned about using hydroelectric data from another year, but, more basically, we suspect that using hydroelectric dispatching based on present methods does not include a hydroelectric dispatching strategy designed to optimize the system INCLUDING consideration of the growing presence of wind energy as is being modeled. While the SCE results are being analyzed by parties, we hope that this preliminary SCE ELCC estimate does not have the effect of delaying the use of the ELCC numbers found in the report, and collaborated by ORA, for bid selection in the Renewable

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the average wind power delivered to SCE during the top 100 load hours of 2002 was 257 MW. Although this would be a primitive measure of ELCC, it does serve as a sanity check on the 227 MW found by ORA above.

[7] Tehachapi and San Gorgonio.

[8] Since no plant is 100% reliable, using a forced outage rate of 4%, (see the report, p.28) indicates that the SCE area wind energy production is the reliability equivalent of a "baseline" dispatchable plant rated at 227/(1-.04) = 236 MW

[9] We do not know the contractual rating total of the SCE wind power plants. Undoubtedly, there are wind plants using older turbines with low mechanical availabilities that never approach the contract rating. However, the purpose of this study is to predict how well new wind turbines will perform. For this purpose, we fell that actual measured maximums are a better measure of "rating".

Portfolio Standard procurement.

Sincerely,

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